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Missouri Valley Veterinary Bulletin

Official Journal of Missouri Valley Veterinary Association

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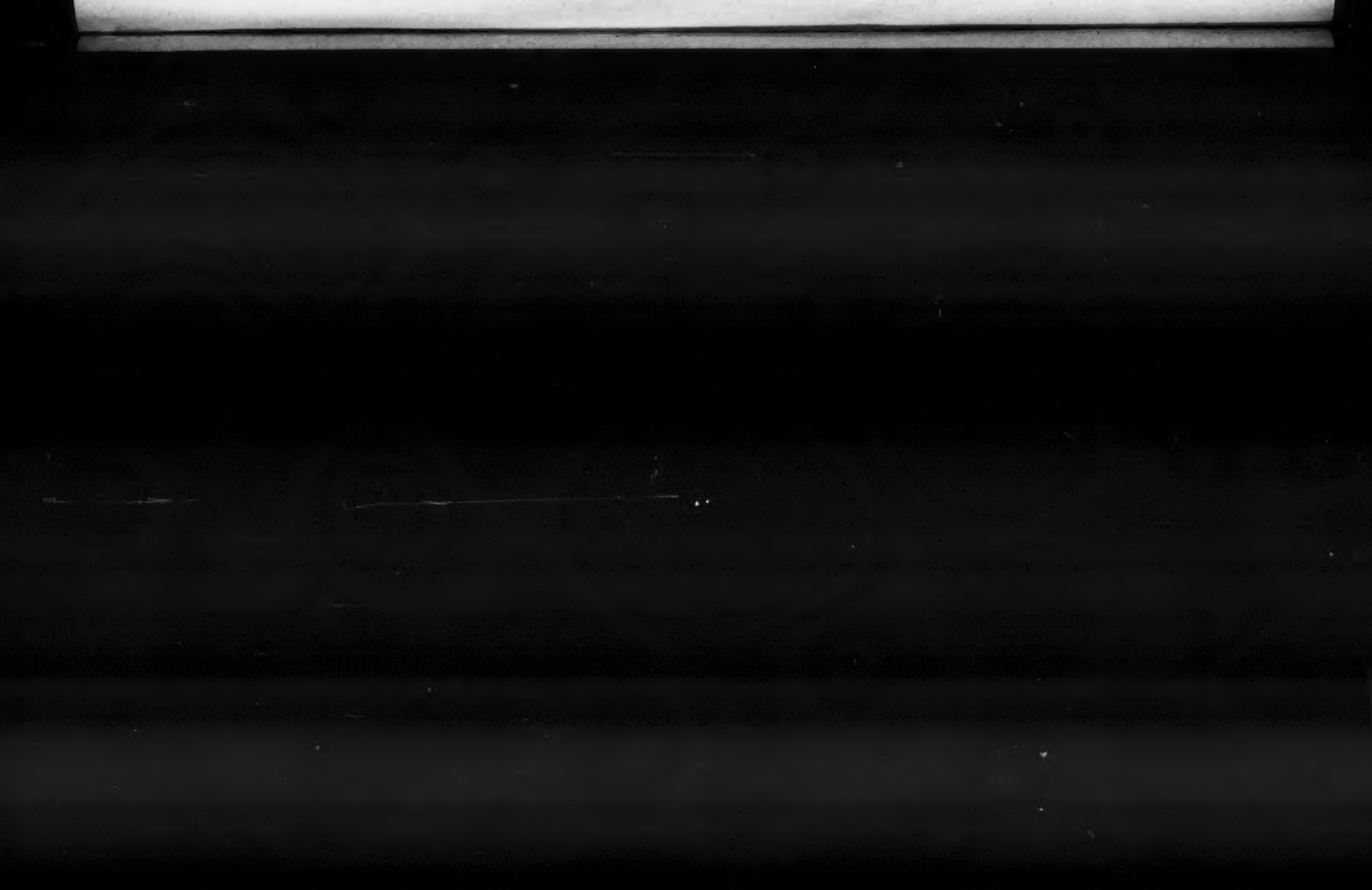

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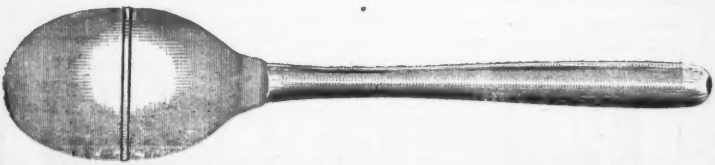

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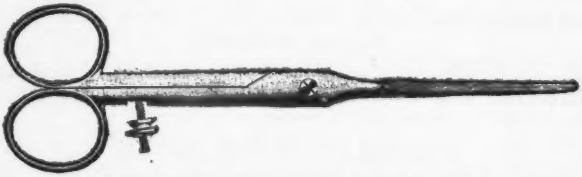

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Missouri Valley Veterinary Bulletin

PUBLISHED MONTHLY BY

MISSOURI VALLEY VETERINARY ASSOCIATION

Entered as second-class matter April 14, 1908, at the postoffice at Hiawatha, Kansas, under the Act of Congress of March 3, 1879.

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Subscription Price $1.00 Per Year.

VOL. IV. JUNE, 1909. NO. 3.

EDITORIAL.

Every reader has an equal show with the editor to express his opinion.

It is none too early to begin planning your affairs to attend the Omaha meeting. In fact, it is not too soon to begin planning to attend the A. V. M. A. at Chicago next September. You cannot afford to miss either meeting.

Read the address of Dr. La Pointe in this issue. Drink in all he says concerning the benefits derived from attendance at these meetings. Ponder what he says of the stagnation and narrowness of the veterinarian who isolates himself, and then resolve that you will be both heard and seen at Omaha on the 16th and 17th.

As soon as you receive a program of the Omaha meeting from Secretary Kaupp, pick out that subject on which you are most experienced or best informed, and resolve to contribute to the discussion of that paper. Decide on questions you wish to ask on other subjects and if not answered in the paper, ask them. If every veterinarian who attends the Omaha meeting would do this, we would have the grandest meeting ever, without one lagging moment. And each one would enjoy every part of the meeting.

Denver has just had their dairies scored according to the Government score card system, and finds them in deplorable condition. It is now making an effort to secure an efficient dairy inspection law, but will politics keep out of it and will a non-qualified man fill the position?

DR. PAUL JUCKNIESS SECURES AN ASSISTANT.

From a recent issue of the West Point Republican, we learn that State Veterinarian Jucknies, of Nebraska, was married at the home of Dr. G. J. Collins, of West Point, to Miss Pauline Olszewski, of Omaha.

Three months in the office of State Veterinarian conclusively demonstrated to Dr. Paul that one man could not perform, without help, the arduous duties devolving upon the occupant of that office, So, acting upon the advice of Dr. David Luckey ,he sought an assistant among the femininity of Omaha and has taken unto himself a helpmate as above recorded. The best wishes and congratulations of The Bulletin are extended to Dr. and Mrs. Juckniess.

Constitution and By-Laws of the Kansas Veterinary Medical Association, is the title of a pamphlet just issued under the direction of Dr. Burton Rogers, Secretary. The objects of the Kansas Veterinary Medical Association are set forth in detail as follows:

"The objects of this association shall be to bring the graduate veterinarians of Kansas into one organization which shall meet at least once annually for a full and frank exchange of experiences and views that will result in the mutual advancement of its members in all phases of veterinary science and influence the laity to respect and accept the sound progressive opinions of the profession in certain scientific, sanitary legislative material and social affairs of the State of Kansas and particularly its live stock industry.

"Its further object shall be to jointly and serevally elevate the profession and intensify justifiable respect and support within its own ranks."

If the Secretary of the M. V. V. A. has honored you with a request to read a paper at the Omaha meeting, have the courtesy to reply at once. If you can comply with his request, do so ,and at once let him know that you will. If you cannot or will not accede to the invitation to prepare a paper, inform him at once. There are other good men who will read papers and the Secretary has no time to wait for your convenience to find out if there will be a place for the fellow that is willing.

The Minnesota State Veterinary Medical Association and the Minnesota State Veterinary Examining Board have just issued a neat bound manual, "The Veterinary Profession in Minnesota."

MISINFORMATION.

Now we have it. J. A. Burnett, M. D., Little Rock, Ark., arises to speak and informs the world of the size of the dose of various medicaments for animals, from chickens to ele-

phants. This priceless information is dished out especially for pharmacists and physicians, through the columns of the Physicians' Drug News.

Here are some of the things the unsuspecting animals will receive when the obliging family doctor has ministered to the wants of the sick folk in the house: Strychnine sulphate, dose for a horse gr. IV-X, dose for a cow gr. I-IV, a dog it appears can be cured by a dose of strychnine sulphate ranging from 1-60 to 1-10 of a grain, while it is dangerous to give a sheep more than 1-60 grain of strychnine sulphate. But for a veritable strychnine fiend, the cat stands unexcelled. The dose for pussy is gr. X-XV, while the chicken can take only III to V grains, and a goose is visibly affected by VII grains of the potent alkaloidal salt.

The obliging Arkansawyer does not stop with the above. There are four other drugs or a total of five necessary in the treatment of animals. As we have never seen a veterinarian's medicine case that contained all of the other four named, we will here enumerate them: Ol. Ricini, acetanilide, morphine sulphate, and quinine sulphate. In this latter remedy the cat again shows its eccentricities by requiring from two to four ounces at a dose. Pleasant task giving some nice fierce cat a tomato can full of quinine sulphate, or perhaps it were well to put it in two-grain capules and give 1000 at a dose. Nor is that all; we learn it is right and proper to give the two pound pig 2 grains of quinine sulphate and the 1000 pound boar 10 grains. We are not sure what the therapeutic indications are for quinine sulphate in porcine practice but think it is used mainly for "kink-in-the-tail".

The scientific value of this table of dosage is on a par with that of the article in Harper's some time ago, which stated that Texas fever is a miasma that exists in a southern Kansas town and that all cattle shipped through there contracted it. The Physicians' Drug News is reliable in its line and contains many things that veterinarians should know and can profit by, but its editor should avoid the discussion of questions other than pharmaceutical, and John Albert Burnett, M. D., would likewise do well to confine his discussions to subjects about which he knows at least something.

The editor of Physicians' Drug News writes us that the dosage table given is one purported to have been furnished Dr. Burnette by a professor in a veterinary college in Washington, D. C., and that he, the editor, assumes no responsibility whatever for it.

USE OF BOVO-VACCINE.

Two years ago the entire herd at the Maine insane hospital was condemned and destroyed on account of tuberculosis. At that time ten young animals were bovo-vaccinated and since that time all have been tuberculin-tested twice and some of them three times. These animals were the progeny of tuberculous parents in every instance and were, of course, more predisposed to disease than those born of healthy parents, hence the results are of more importance than if the work had been started with a healthy herd as the foundation.

The hospital authorities in building up their new herd have continued the work of vaccination and at the present time have about 40 immunized animals, and will eventually have an entirely immune herd. Just about the time the work was started at the hospital it was also introduced in several other badly infected herds in different parts of the state.

All of this work has been under the observation of the state cattle commissioners, who were so satisfied with the results that at the last session of the legislature they asked for authority to extend the work throughout the state. A bill was enacted giving them authority to supply vaccine free of charge to any breeders who might desire to build up immune herds.

Professor Von Behring, who is the discoverer of diphtheria antitoxin, after having perfected that product, turned his attention to tuberculosis in the hope of finding a vaccine to prevent the disease in the human family. Beginning, as all such investigations do, with the guinea pig, he gradually worked up the animal scale until he found that immunity could be produced in cattle. Realizing that this was of practical value he perfected his method of vaccination in 1901, and is still carrying on his investigations to produce a vaccination against human tuberculosis.

The same amount of money which it now costs the state to get rid of one tuberculous animal would pay for immunizing about fifteen calves. If this work were continued for a few years, the number of infected animals in the state would be greatly reduced at a nominal expense and eventually the cattle of the state would consist wholly of immune animals. The advantage to the breeder consists not only in protection against disease, but also in the enhanced value of his stock which is bound to find a readier market.

SWAMP FEVER (So-CALLED).

By Dr. C. A. Nelson.

The nomenclature of this disease has varied a great deal. It has been known as typhoid fever of the horse, malarial fever, infectious anaemia, pernicious anaemia, American surra, and swamp fever. Pernicious anaemia seems perhaps to be the most suitable for our present knowledge of the disease. It is a disease peculiar to the horse and, so far as we know, not communicable to other animals.

For some time it has baffled the efforts of investigators and general practitioners as well. Much remains yet to be learned about the mode of infection ,as well as treatment of the disease. Its cause is attributed to an ultra-microscopic organism or virus, present in the blood of infected animals.

Blood drawn from infected animals even after being filtered through the finest filterers known, is capable of producing the disease, when injected into susceptible animals. The virus is still active in infected animals twenty-four hours after death. How much longer the virulence is active is not known. It is surmised that the infection is obtained through intermediate hosts, such as flies or mosquitoes, or through internal parasites, the empryos of which may be taken into the alimentary tract with grass or hay obtained from swampy lands.

The course of pernicious anaemia is generally chronic, extending over a period of from two to eighteen months, depending on the condition of the animal and other complications, such as colic and nephritis.

The period of incubation varies from ten to forty days, manifested at the onset by rise of temperature lasting four to six days. The fever generally subsides and the animal remains normal, or nearly so, for some time. There is then another period of fever more severe than the first. Some animals succumb to this; others may again have a period of apparent convalescence before the final end.

The post mortem discloses a very much emaciated carcass and a bloodless condition of all visible mucous membranes. There is difficulty experienced in skinning, due to the absence of adipose tissue. Further than this most car-

casses are conspicuous by the absence of microscopic lesions. There may be subcutaneous and inter-muscular edema, in different parts of the body. Often there is hypertrophy of the heart and sometimes of the spleen and lymph glands.

There may be petechial hemorrhages of the serous membranes of the heart and lungs, with a serous exdate into the thoracic cavity. No particular organ or tissue is affected to any great extent, with the exception of the blood. The most noticeable thing about the blood is its pale color, due to the diminution in the number of red blood corpuscles.

The count of red cells may run as low as two million to the cubic millimeter, or a little more than a fourth of the normal number. The red cells remaining are paler than in the normal state and often altered in shape and size. The blood is also deficient in hemaglobin. Fatty degeneration of blood vessels and internal organs has also been noted.

Symptoms.—The history of most cases is characteristic. The horse has been losing flesh in spite of a ravenous appetite. Inquiry generally reveals the fact that the animal was sick, perhaps has a spell of diarrhea some time previous; that he has not been doing well and gets tired very easily. The veterinarian is perhaps consulted at this time in regard to the animal's teeth, or he is called to see the horse in the second attack of fever. The fever may run from 103 to 105 degrees. There is accelerated respiration without any apparent change in the lungs or air passages. All visible mucous membranes are of a pale dirty color. Then the animal is moved, the gait is unsteady and dragging, especially behind. There is weakness and some sensitiveness over the loins. There may be diarrhea and relaxation of the sphinxters resulting in involuntary micturition. Polyuria is a prominent symyptom.

Auscultation over the abdomen reveals increased peristalsis which persist all through the course of the disease.

There may be swelling of one or more legs, as well as the most dependent part of the abdomen. Part or nearly all of these symptoms may be present during the fever stage. The most noticeable symptoms may subside even after the second stage of fever, but the lessened capacity for work, voracious appetite, pale mucous membranes, gradual emaciation and increased paristalsis are a constant chain of symptoms.

Towards the end the temperature rises permanently. The respiratory rate is higher and the heart labors violently. There may be regurgitation at the jugular veins and the animal finally dies from heart failure or exhaustion.

Diagnosis.—This is comparatively easy when one considers the history and has one or more cases under observation. The intermittent fever and the microscopic examination of the blood will differentiate it from leucaemia and anaemia due to other causes. In the early period of fever it might be mistaken for pneumonia, influenza, or lymphangitis, but the pale color of the mucous membrane and normal passage of air through the lungs and upper air passages facilitates the differential diagnosis.

Prognosis.—This is quite unfavorable. The mortality is perhaps 70 or 80 per cent. Accurate figures are difficult to obtain .

Treatment.—This is unsatisfactory in the majority of cases. A great many remedies have been used with indifferent success.

Purgation is not advisable on account of its weakening effect, aside from the fact that the bowels seldom become torpid. During the onset of fever good results may be obtained by the use of acetanilid. Quinine and other fever remedies, later nux vomica, convallaria, belladonna, digitalis and other stimulants are indicated.

Fowler's solution should be given as a tonic, continued for at least 30 to 40 days, beginning with about two drachms and gradually increasing the dose to four drachms or more, three times a day.

In addition to this the animal must be well housed and clothed during cold or rainy weather, and should only do enough work for exercise. Since our knowledge of this disease is limited and no medical line of treatment has been found which is universally satisfactory, our efforts should be directed towards prophylaxis. On premises where the disease is found, pastures and meadows should, if possible, be disinfected by burning, on the presumption that the forage is a carrier of infection.

Horses should not be allowed to graze on land which is swampy and not well drained, nor should hay cut from such lands be fed to them.

THE MANUFACTURE AND USE OF CAPSULES.

From a neat little booklet issued by H. Planten & Son, of Brooklyn, N. Y., we learn the following:

Capsulating was invented by Mothes, a French pharmacist, in 1833. In 1845 a process was invented by which the small membranes from the intestines of sheep were used to make small bags or pockets in which to place oils, etc.

Capsulating was introduced into this country in 1835 by the late Mr. H. Planten, a Hollander by birth. Mr. Planten constantly experimented to improve his methods and so successful in the manufacture of gelatine capsules was he that for several years no one else in America manufactured them. His business rapidly increased and changes in location to secure more space were frequent.

The demand for elastic (soft) capsules did not become general until 1860. They are now the favorite variety with veterinarians. It requires no balling gum, speculum or rubber gloves to administer elastic capsules to a horse, nor does it require any particular skill or entail the loss of skin from the knuckles or other parts of the hand. A small stick eighteen inches long, a lathe, shingle, or branch of tree, sharpened at one end, will serve for the administration of elastic capsules, and the farmer can administer them as well as the veterinarian, after being shown a single time. All that is required is to push the capsule well back on the horse's tongue by means of the stick.

Modern pharmaceutical progress requires that nauseous, bitter, acrid, and pungent substances shall be placed before a patient in the most attractive manner. Capsules fulfill these requirements and the further requirements of convenience, exactness of dosage, imperishability of the contents, and elegance of the finished product.

The book contains much interesting information about the manufacture of capsules and may be had, we suppose, for the asking.

HOG-CHOLERA.

DR. L. VAN ES.
North Dakota Agricultural College, Fargo, N. D.

Since the discovery of a practical method of producing immunity against hog-cholera by Dorset and his co-workers, a new interest has become attached to this disease, and it is on account of this new interest that a discussion of its features perhaps is justifiable.

In order to condense our subject as much as possible

within practical bounds, we will not make mention of the history of the disease and of the various phases of the evolution of the knowledge, now on hand. We will also avoid discussion of the many points of purely scientific interest for the same reason.

There is perhaps no disease, which has caused our farmers more palpable losses than this, while our scientists have for years exerted their best efforts in attempts to find a rational method of prevention.

The earlier attempts of this nature were naturally all based upon the belief that Salmon's hog-cholera bacillus was the only specific cause of the disease, and while, no doubt, various investigators succeeded in rendering animals immune against this organism, it was apparent that a great deal of research work was still to be done, before the solution of the problem could be looked for. The later work was begun by de Schweinitz, who had commenced to doubt the relation of the hog-cholera bacillus and when after the death of de Schweinitz his ideas were tested and further worked out by his successor Dorset and his fellow workers, the fact was established that hog-cholera is apparently due to an ultra-microscopic or filterable virus and that if the Bacillus suipestifer plays a part at all in the etiology of the disease, it certainly is not a sole or primary one.

This discovery not only opened the way for the subsequent immunity experiments, but it also put a new phase on the disease known as swine-plague. This disease, most commonly associated with hog-cholera, is regarded as due to infection by Bacillus suisepticus, but it is more than probable that this organism also plays a secondary role.

In the outbreak among the swine of this institution, some of our cases showed lesions typical of swine-plague, others those of hog-cholera, while not a new of both diseases. Both diseases, if such they be, were absolutely checked by the use of hog-cholera hyper-immune serum. I will not deny the pathogenic character of Bacillus suipestifer and suisepticus, in fact. I believe that they define largely the patho-anatomic feature of the disease, but it is my opinion, that for practical purposes, we may safely cease to make a distinction between the two types of disease.

As to the nature of and the part played by the so-called filterable virus, we do not know whether we have to deal with a true "contagium fluidum" or with an agent capable of either rendering the body specially vulnerable to infection or of rendering certain micro-organisms specially aggressive.

Defibrinated hog-cholera blood when injected into a susceptible animal will promptly produce acute cholera, but it

is probable that the natural infection takes place by way of the alimentary tract. In such cases the virus is transmitted by the excretions of diseased animals and contaminated food and water.

As to the distribution of the disease from place to place, there are a number of well known factors which play a prominent part, such as the congregation of swine from a great number of localities at stock shows, sales, etc. There are many instances in which, such shows and sales have proven to be real clearing houses of infection. A prominent part is also played by intermediary bearers, such as hog buyers, who travel far and wide from hog lot to hog lot; neighbors, who in a spirit of sympathy visit the premises of friends whose hogs are dying with some fatal disease and who carry infection on their shoes into their own hog lots. It is probable that animals such as birds, dogs, or coyotes also are capable of carrying infection to considerable distance. The dust blown from infected lots also seems a very efficient distributor of infection. Food and drinking water, may be contaminated and thus serve as agents of dissemination. It is a well known fact that hog-cholera has been carried from place to place by means of small streams.

The course of infection, when once introduced into a herd, varies, no doubt, with the virulence of the virus or with its quantity. In some herds the hogs sicken in rather rapid succession, in others the evolution of the disease is slow. In most instances the progress of the infection is not very rapid and such explosive outbreaks, like we may see in anthrax for example, are practically unknown in hog-cholera, yet in the individual animals the duration of actual disease may be exceedinly short.

The period of incubation also varies, after the hypodermic injection of small quantities of cholera blood the first symptoms of sickness usually occur in from 6 to 12 days, but after natural exposure, a much longer period often lapses. In some of our local outbreaks the disease made its appearance about one month after exposure.

The symptoms of cholera do not usually present a pathognominic character. In the beginning of outbreaks peracute cases are seen. In those definite symptoms frequently fail and the affected animal may be found dead, without having shown any previous indisposition.

In the acute form, which furnishes the greater percentage of our cases, lack of appetite and a disposition to separation from the rest of the herd is an early feature. The affected hog will bury itself in the litter and is not easily induced to stir about. In white hogs, we often find a darken-

ing of the skin, sometimes to redness, and the bristles have a roughened appearance. There is redness, and often injection, of the visible mucosae, while the body temperature is elevated.

Gastro-intestinal phenomena are an early feature of such cases. Vomiting is not uncommon, and diarrhea is frequently seen, although it may be preceeded by a constipation of variable duration. Diarrhea and constipation not rarely are of alternate occurence. The faeces in diarrhea are liquid of a light or dark yellow color, and emit a fetid odor. In constipation the faeces are hard, the color is dark or black and often show a covering of inspissated mucus, which in itself may be tinged with blood.

Respiratory difficulty is common. It varies from the symptoms expressive of catarrhal inflammation of the air passages to those of a high degree of dispnoea, occasioned by pulmonary solidification and cardiac weakness.

The conjunctivae are swollen and the eyelids may be stuck together, by a purulent exudate.

The skin in many cases shôws an exanthema. On the abdomen, in the axillary, post-auricular, submaxillary perineal regions and on the inner side of the thighs a diffuse or circumscribed redness may be present, which later on may assume a purple tint. The skin so affected often shows blebs, which later on may dry up to black circumscribed scabs.

In the chronic forms of cholera, the more prominent features are emaciation, digestive disturbances like an alternating diarrhea and constipation. There are commonly respiratory difficulties, as chronic pneumonia is a frequent complication. Such cases frequently show a fair appetite and not rarely lead one to believe that recovery will take place. In the great majority of cases, however, the lesions present are sufficient to cause death.

Since the elimination of the Bacillus suipestifer, the diagnosis of hog-cholera can no longer be rendered certain by bacteriologic tests and we now have principally to depend on the patho-anatomic features to determine the identity of the disease.

For this reason, we undertake to sum them up in some detail, while in doing so, we wish it understood that no attempt will be made in differentiating, between the cholera and plague forms of the disease.

In a great number of cholera cases, the skin presents lesions of an inflammatory nature. There may be seen a diffuse or circumscribed redness of the submaxillary and post-auricular regions. The same may be seen on the lower surface of the body and is frequently most pronounced in the

region of axilla, pubis and the inner side of the thighs as well as the perineum. In some cases the skin lesions consist of decided hemorrhages, dark red in color, now occuring as small punctiform hemorrhages, then again as larger blotches. Pruritus is not uncommon.

As impetiginous exanthema is frequently seen; in such cases vesicles of varying sizes form, which are filled with a serous or seropurulent fluid. After evacuation or absorption of the contents, the vesicles dry up and become changed to a dark or black incrustation.

In other cases the skin lesions are in the nature of an urticaria, while during the recent outbreak the skin in one case markedly resembled the eruption seen in varicella.

Aside from the lesions mentioned, we frequently meet with passive changes in the skin. These can be attributed to respiratory and circulatory difficulties and are most commonly seen about the ears and amount to a passive congestion, whereby the skin becomes dark in color and more or less edematous.

The lymphnodes are the organs, which as a rule present the most constant lesions and it is in those structures, that the septicaemic character of the disease is most evident. In the beginning of outbreaks, when death from the per-acute form of the disease is commonly seen, the lymphnodes are often the only organs showing a definite lesion, and in making the post-mortem diagnosis in cases of sudden death, they must never be overlooked. In our autopsies during the recent outbreak, we never failed to find those changes in the inguinal nodes, while, in fact, they can be looked for in the other groups as well, although perhaps with less constancy.

One of the most common lesions is hyperplasia, the nodules are enlarged, grayish white in color, while their blood vessels are decidedly congested. They are frequently edematous and after a sufficient duration of the disease are apt to show necrotic foci.

In the per-acute cases, the lymphnodes more frequently present the picture of a hemorrhagic lymphadenitis. The nodes are greatly swollen and are of a very dark color, which may even be noticed through the fascia surrounding them.

In the chornic forms of cholera, the lymphnodes are often found to be very firm on account of the proliferation of the connective tissue elements. In such organs secondary changes such as hemorrhages, softening, etc., may be met with. The mucosae of the mouth and pharynx are sometimes the seat of diphtheritic lesions, which may become changed to deeper ulcerations, according to the nature of the secondary infection, which may be playing a part. A croupous-diphtheritic

tonsilitis is very common and when found should always arouse the suspicion of cholera.

In the more acute cases the mucosa of the stomach frequently shows a marked hemorrhagic inflammation, which in more advanced cases, may become complicated wih diphtheritic lesions.

The intestines are the seat of the most classic lesions of the disease, although the most typical ones are not always a constant feature

In a small portion of the cases, there is a catarrh throughout the entire tract, in which no erosions of the surface can be shown. The mucous membrane as well as the adenoid structures are swollen. This condition is not uncommon in the per-acute form of the disease.

In quite a number of the per-acute cases a hemorrhagic enteritis is present without showing any diphtheritic lesions. In such cases the entire tract may be involved, although most commonly the lesions are most marked in the large intestines.

The lesions vary much in intensity, there may be diffuse redness, especially of the mucosa, but often also involving the other tunics. Aside of this redness, hemorrhages in the mucosa, submucosa and under the serous coat are common. They vary in size, from the mere punctiform specks to large blotches of the size of a half a dollar. They also vary much in color, ranging from a bright red to a deep black, while in many instances I have seen a rusty color.

In the severe per-cute cases the entire intestinal wall is hemorrhagically infiltrated, the wall itself being thickened and turgescent. In such cases the intestinal contents frequently have a liberal admixture of blood. Accompanying such lesions we find similar ones in the mesentery and mesocolon, while the corresponding lymphnodes are also hemorrhagically infiltrated.

The follicles of the intestinal mucosa may be the seat of inflammatory changes, giving rise to the anatomic picture of an enteritis follicularis.* In such a condition the follicles are markedly swollen and are conspicuous as white, round nodules. Their contents is softened and can be readily squeezed out. The intestinal lymphoid tissue is always hyperplastic. Ulceration of the involved follicles may lead to perforation. The best known lesions of cholera are the intestinal ulcerations. Even here many variations are seen. In one form we see a general confluent croupous-diphtheritic enteritis in which the mucosa is covered with a grayish white croupous exudate. When this condition has existed for some days the intestinal wall becomes thickened and rigid and the mucosa becomes necrotic and assumes a dark or black color. In other

cases the ulcerations are isolated and vary from superficial erosions with a diphtheritic erosions with a diphtheritic covering to deep excavations into the thickened intestinal wall. In some of such cases actual perforation takes place, causing sudden death by shock and peritonitis on account of the escape of the contents. In other cases again there is an incomplete perforation just sufficient for the escape of small amounts of intestinal contents. Such accidents are frequently followed by a plastic peritonitis marked by extensive and firm adhesions, binding the intestinal mass into great conglomerations, which often can be found through the abdominal parieties of the living animal.

In quite a few of the cases we meet with and especially in the sub-acute and chronic ones, there may be evidence, that the ulcerations are being repaired. In such cases, a sharp line of demarcations differentiates the necrotic parts from the normal intestinal tissue. The croupous covering of ulcers, becomes drier, shrinks up and assumes a dark or black color, while at the same time it is being pushed into the lumen of the gut by the proliferation of the normal tissues at the base of the ulcer. The characteristic button, thus formed, may become pedunculated and drop off, leaving a light colored cicatrix. In acutely fatal cases of cholera, buttons are not often seen, as they are more essential to the chronic cases.

The spleen does not offer anything characteristic. There may be hemorrhages and petechiae under the capsule, while in many cases nothing abnormal can be seen in this organ. In a number of cases the organ is considerably enlarged and of a black color. In old chronic cases, we may find necrotic foci in the spleen pulp.

The liver often shows a marked hyperaemia in acute cases and shows a parenchymatous degeneration in nearly all cases. In some of the more chronic forms of the disease this degeneration may be very complete, so as to justify the term "fatty liver". In such cases the organ is of a light yellow color.

The peritoneum often participates in the disease. The lesions range from small hemorrhages to a real fibrinous or plastic peritonitis. In the latter cases the lesions are probably due to infection permitted to enter through lesions of the intestinal wall.

The kidneys show degenerative phenomena in all cases and in quite a few the kidney lesions remain confined to a more or less developed degeneration of the parenchyma. In the greater number of cases, we find also evidence of hemorrhagic nephritis in the shape of a varying number of small punctiform hemorrhages in the kidney substance and under

its capsule. In one instance, I found a very marked hemorrhagic infiltration of the entire urinary tract, with an active subcapsular hemorrhage of one of the kidneys.

The upper air passages are frequently the seat of catarrhal conditions, while the lungs may present a variety of lesions, the majority of which probably being of a secondary nature.

Pulmonary congestion is very frequently found as well as edema, while pneumonia is exceedingly common and is perhaps one of the most fatal complications in the chornic cases.

The inflammatory process may be lobar or lobular. In the former, usually confined to the anterior lobes, the line of demarcation between normal and inflamed lung is sometimes very sharp. The inflamed areas are usually of a light red, brownish or gray color.

In the lobular form, imflamed lobules may be found scattered through the entire lung and may be completely surrounded by intact lung tissue.

In cases of sometime standing necrotic changes are common, when necrotic foci spring up in the inflamed areas. The contents of these foci is cheesy or softened, while in some cases they are very similar to real abscesses. It is very probable, that the patho-anatomic picture of cholera pneumonia is largely determined by the organisms, which produce the secondary infection.

The pleura is frequently involved. This membrane, especially its visceral portion, is often the seat of petechiae, while intense adhesive pleurites are by no means uncommon.

The heart in the chronic cases commonly has a par-boiled appearance, owing to fatty degeneration of the myocardium, while in the acute ones, we frequently find hemorrhages of varying size under the epicardium.

The pericardium often shows hemorrhages, while adhesive pericarditis is by no means uncommon.

That hog cholera is not a disease which offers a field for curative intervention is a fact so well known, that it will not be necessary to devote much space to the discussion of either treatment or prognosis. The mortality of the disease, in spite of the fact that for years the market has been glutted with cholera remedies, still continues to range between 80 and 100 per cent. Let us therefore turn to the more hopeful field of prophylaxis.

Even this field, up to a year or so ago, offered but a very gloomy aspect. It is certain that the practice of isolation, segregation, disinfection, sanitation, etc., always had an inhibitive influence upon the spread of the disease, but their influence was not so that they could be relied upon as an absolute protection. For a long time it was apparent, that

if hog cholera was to be eliminated, it would have to be done by means of some process of immunization, and for many years science has occupied itself with this problem. It was not, however, until the discovery of the fact that the hog-cholera bacillus is not the primary cause of the disease, that the way was opened to a practical solution of the immunization problem ,because now experiments could be made in which tthe bacillus suipestifer played no part. As the result of the research made by Dorset, McBryde and Niles, it was found that hogs which had recovered from an attack of the disease possessed a very potent immunity, but that their blood could not be absolutely relied upon to confer immunity to other swine, injected with it. When the immune hogs, however, were previously treated with large amounts of virulent blood, which they tolerate very well, their blood acquires a marked antitoxic property and confers a passive immunity to susceptible hogs injected with it.

The hyper-immune serum forms the base of the Dorset method of immunizing against hog-cholera.

The method consists of rendering the animals passively immune and if an active immunity is desired, to inject into them a small quantity of virulent blood simultaneously or to expose them to natural infection while their immunity lasts.

The immunity obtained after a serum injection only lasts about four weeks, but if this immunity is rendered active, the animal will be protected for six months—probably much longer.

The serum is injected in doses ranging from 20 to 60 c. c., according to the size of the animal. The injection is made subsutaneously on the inner side of the thigh. If virus is used it is injected in doses of 2 c. c. simultaneously in the thigh of the opposite side.

In some cases the immediate result is a small circumscribed swelling at the point of injection and it is possible that this swelling is due to a local infection by the needle. It may also be due to the small amount of carbolic acid, which has to be added to the serum in order to insure its keeping qualities.

The efficiency of this serum has been demonstrated in many instances, notwithstanding that failures have also to be recorded, and the question now presents itself as to the manner in which the Dorset method of immunization can be applied in order to secure the eradication of hog-cholera.

It seems certain that the use of the method can be depended on to eliminate hog-cholera as a source of serious loss to our swine breeders, but if this is to be accomplished, systematic action is necessary. The manufacture of the serum

and virus should be under the control of the state live stock sanitary authorities. Those products should be placed at the disposal of swine owners free of charge or at cost, while their use, especially that of the virus, should be left to trained veterinarians operating under the direction of the state authorities. The promiscuous use of the method by everybody will not have a general good result, while the sale of virus by manufacturing concerns should be prohibited, as it is not safe to place virulent material at the disposal of the general public.

It seems best to entrust the manufacturing of the serum to the state experiment stations and to make it the duty of the state live stock sanitary authorities to superintend its systematic application.

All cases of apparent infectious swine diseases should be promptly reported and by methods of publicity swine raisers should be educated to that effect. Such reports should at once be acted upon by a thorough investigation and when the death turnsout to be due to cholera, immunization should at once be undertaken.

In the immunization of herds in which disease has occurred, it is probably better to use the simultaneous virus injection than to depend upon natural exposure. From the experience of the writer it seems, at least, that there are cases in which of the writer it seems, at least, that there are cases in which the infective material gains entrance to the exposed hogs so slowly, or in which the infectious material introduced is so slight, that either the passive immunity has already been used up before the introduction of infection or that the amount of natural virus was too slight to produce an active immunity. The results in both cases are that a permanent immunity is not obtained and that in course of time the animals sicken anyhow. The character of special strains of virus no doubt also plays a part

We therefore deem it best to immunize by simultaneous injection, so that we make certain of actual exposure.

The injections should be confined to healthy hogs only. The serum has no curative properties and the injection of sick hogs would only mean a waste of material. Furthermore, it would be a cause to permit sick hogs to continue their existence for a while longer, which again would mean an additional amount of infective material to be scattered far and wide. It is our opinion, that after the immunizing of healthy hogs, all sick ones should be immediately destroyed and burned, and should, in spite of immunization, some hogs develop cholera, they should be disposed of in a similar manner.

This measure is not designed for the protection of the

herd immunized, but simply to prevent infectious material from scattering over a community.

In case immunization is done, immediately after the occurrence of the disease, it may be sufficient to confine action to this one herd unless other swine are close by, when it would be better to immunize all hogs within a radius of half a mile.

When the infection has already made considerable headway in one or more herds, it seems advisable to include in the immunizing process all hogs within a radius of three or four miles in order to surround the original focus of infection with a zone of immune animals.

We also consider it of advantage to have the veterinarian who makes the injection prepare the virus to be used with the serum, whenever such is possible. The reason for preferring this procedure lies in the fact that in our experience we encounter some difficulty in preventing putrid changes in stored virus, no matter how carefully prepared and stored. Putrefaction does not seem to destroy the virulence of the blood, nor have we complaints about the virus issued, but on general principles, we should prefer the fresh virus.

This virus can be prepared readily by the veterinarian in charge of the immunizing operations from sick hogs found in the outbreak. Such animals are best fitted for this purpose when they are at their sickest. The necessary appliances could be furnished in a sterile condition by the experiment station supplying the serum. When no sick hogs are available, the virus stored previously should be used.

All this kind of work should be done at state's expense, as it is done with a view of general protection and as under such an arrangement immunization can be made more universal. Furthermore, local veterinarians in general practice, who should, in order to assure prompt action, be employed for this work as much as possible, should be given opportunity to familiarize themselves as much as possible with the post mortem diagnosis of the disease, the preparation of the virus, and the method in general. This should be arranged for at the serum plant of the experiment station and at state's expense.

In addition to the measures here recommended, arrangements should be made by the managements of stock shows, sales, etc., with the live stock sanitary authorities to have all swine exhibited properly immunized, so as to eliminate such institutions as possible disseminators of infection.

The ordinary methods of quarantine, disinfection, and proper disposal of carcasses should also be adhered to.

*Polls. Varkenssickten in Nederland.

SERUM IMMUNIZATION AS A PREVENTATIVE FOR HOG CHOLERA.

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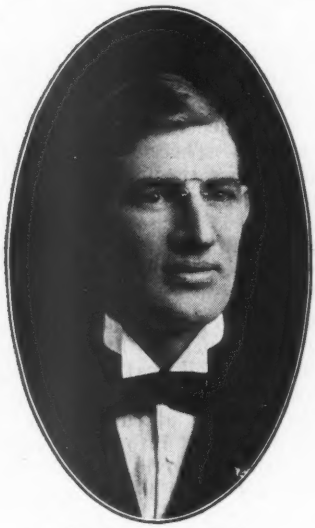
The rapid advances made in the study of immunity during the past few years renders it essential that we consider a few of the basic principles upon which the serum immunization against hog cholera rests before considering the serum treatment proper.

Immunity is that condition in which an individual or a species of animals exhibit unusual or complete resistance to an infection for which other individuals or species show a



DR. C. H. STANGE.

greater or less degree of susceptibility. Consequently it is only in connection with infectious diseases that we consider immunity. Immunity may be of various types. For example, we have acquired immunity, when an attack of a certain infectious disease brings about a change which renders the individual immune to further attacks of the same disease. We have natural immunity, when individuals or species possess an inherent quality which prevents them from contracting the disease to which other individuals or species are susceptible. This immunity is not brought about by any condition which occurs subsequent to birth. We have anti-bacterial rather

than anti-toxic immunity in such diseases where the poisons are not secreted in a soluble or diffusable form by the living cell. In these we have what are known as endo-toxins. However, such diseases may be accompanied by pronounced toxic symptoms.

In other diseases of which diphtheria and tetanus are examples, the serum neautralizes the toxins, but does not necessarily injure the organism itself. The distinction between anti-bacterial and anti-toxic immunity is an important one.

Active immunity, which is also usually of a more or less lasting nature, results from infection or intoxication and depends upon a specific reaction on the part of the tissue cells in response to the chemical injury produced by the bacteria or their toxins.

When an immune serum is injected a passive immunity is obtained because it depends upon the introduction of immune bodies rather than their production through an active process on the part of the one injected.

Antitoxic Immunity.—The combination of toxin and antitoxin is direct and follows the laws of chemical combination. The toxin is composed of two groups, a haptophore or combining group, the other is the toxophore or poisoning group. The haptophore or combining group is quite stable, while the toxophore group is destroyed at 55 degrees C., or decomposes on standing. This, however, does not prevent the haptophore group from uniting with a suitable antitoxin. It is only when the haptophore group happens to fit to one of the side chains or receptors of the body cell that the toxin can act. If this combination is effected, the toxophore group acts on the cell and injures it. As a result of this injury the receptors are given off in excess and thrust into the circulation. These free receptors constitute the antitoxin. If a toxin now enters the body similar to the one which leads to the production of the antitoxin the haptophore group of the toxin will be satisfied by the antitoxin and prevent the poison from damaging the cells.

Large doses of toxin are administered in the production of antitoxic serum, the object being the union of the toxin with the receptors of many cells. The antitoxins are much more stable than the toxins.

Bactericidal Immunity.—In this, two constituents of the specific serum are concerned in its destructive powers instead of one, as in antitoxic immunity. One of these is able to withstand heating to 55 degrees C. and is contained only in the specific serum. The other is destroyed by heating to 55 degrees C. and is contained in the serum or normal untreated animals as well as in the specific bactericidal serum. For this

reason if bactericidal serum is rendered inactive by being warmed to 55 degrees C., it may be reactivated by adding serum from a normal untreated animal. The less stable constituent of bactericidal serum, which is found in normal serum, is known as Alexin or complement. The other, which is stable and found only in the specific serum, is termed substance sensibilisatrice, immune body or amboceptor. The destruction of bacteria, therefore, requires the substance sensibilisatice of the specific serum and the Alexin which exists in normal as well as specific serum. The ferment-like action or digestive powers of the Alexin or complement cannot injure the bacterial cell until the cell has been rendered susceptible to the action of the Alexin or complement by the substance sensibilisatrice of amboceptor. The Alexin or complement which possesses the digestive powers decomposes on warming or spontaneously on standing and does not exist in immune serum if this is not perfectly fresh. This explains why bacteria are not dissolved by bactericidal serum after it has stood for some time; also why it may be reactivated by adding a little fresh normal serum or by injecting into the living animal. It also explains why a serum may be inactive in test tube experiments and intensely active in the living body in which it finds the Alexin or complement necessary for its action.

The immune body, or amboceptor, possesses two binding groups; one which attaches to the bacterial cell, and the other to the Alexin of the normal serum, and it is only through the immune body that the Alexin can affect the bacterial cell. From the preceding it follows that the stable, immune body, substance sensibilisatrice, or amboceptor, is the exclusive factor in the specific action of bactericidal serum. It possesses a combining group which is specific for the cells with which the animal has been treated. In other words, the widely distributed complement found in the normal serum is concentrated on the bacterial cell by the immune body.

Specific bactericidal sera and normal sera differ in that the specific sera contain immune bodies which are specific for certain bacterial cells and through the medium of which the Alexins or complements in all normal sera are enabled to cause their solution. It is necessary, therefore, that the haptophore group of the immune body fit exactly to certain receptors or side chains of the bacterial cell.

A great variety of inter-bodies are found in small amounts in normal serum and in addition a considerable amount of complements. In immune serum, on the other hand, an enormous increase in the amount of a specific inter-body occurs, which constitutes the immune bodies, or amboceptors. In bactericidal immune serum, this specific increase is sometimes as

much as 100,000 of that of normal serum. The complement is not increased by the immunizing process.

Only one of the necessary constituents, therefore, is supplied by the injection of an immune serum, and that is the immune body. The other necessary body or complement is found in the organism to be treated.

Practical Value of Injections of Bactericidal Sera.—Practically, the use of specific anti-bacterial sera has been tried on a large scale in man, and to a considerable extent in animals. Very virulent bacteria can be injected into susceptible animals without danger, if small doses of their respective anti-serums are given before the bacteria have increased to any great extent in the body. If given later, the sera are ineffective. Bactericidal sera, therefore, enable us to immunize against an infection and in some cases stop one just commencing, but we cannot cure an infection which is already fully developed. Observations in practice indicate that bactericidal sera have not given evidence of great value in already developed disease.

Application of These Principles to Serum Treatment of Hog Cholera.—We cannot expect to get favorable results from the use of a serum or vaccine in diseases, a natural attack of which does not render the animal immune. Inasmuch as hogs which have passed through an outbreak of hog cholera are immune, it is reasonable to suppose that a serum could be produced which would render the animal passively immune, and such, in fact, has been found to be the case. When a hog recovers from an attack of hog cholera we speak of naturally acquired active immunity. When treated with serum, a hog acquires artificial passive immunity. When treated with the serum simultaneous method a hog has artificially acquired active immunity. Naturally acquired immunity is always active inasmuch as we have seen that the cells of the body must take an active part in overcoming an infection. Whether immunity from hog cholera is anti-toxic or anti-bacterial we are not absolutely certain. It is suspected, however, that it is anti-bacterial. If this be true we would expect the following, which is in harmony with practical experience. When a hog recovers from infection with the hog cholera virus, he has developed during his recovery a large number of amboceptors or immune bodies. If he is now treated with a large quantity of virulent blood the cells of the body would be stimulated to increased production of these bodies, which would consequently be found in large quantities in the blood. The complement would not be increased. If the serum is now removed from the animal the complements soon decompose on account of their unstable character, but the immune bodies, being quite stable, would remain in the serum for a long time

unless subjected to very high temperature or other deleterious influences. If this serum is now injected into a hog which has had no infection the immune bodies would, in the processes of metabolism, be eliminated within a few weeks or months. If the hog became infected at the time by artificial innoculation or natural infection, the immune bodies would unite with the receptors of the virus and through the medium of these immune bodies the Alexin or complement, which is found in all normal sera, would destroy the virus. If the hog had become infected some time previous and the virus was present in considerable quantities the amboceptors or immune bodies, which would be contained in an ordinary practical dose of serum would be insufficient to prepare all of the virus for the action of the complements. Consequently, the injection of ordinary doses of the serum would have very little, if any, appreciable effect upon the course of the disease.

If the serum is of low potency, that is, contains but few immune bodies and the blood is very virulent in the simultaneous method, we would expect unfavorable results, which should be avoided. From the above, we may conclude that the serum alone is indicated in outbreaks and in these, only the apparently healthy hogs should be treated, because hogs which have begun to show symptoms of hog cholera have the virus in their bodies in such large quantities that the immune serum would be practically useless. The infection, which would be obtained in outbreaks would be insufficient to produce active immunity even if the animal had been treated with the immune serum. The serum simultaneous method, it is readily apparent, would not be indicated where the opportunities for infection in the natural way are sufficient. Until we can determine with a considerable degree of accuracy the virulence of the blood the immunizing properties of the serum and the resistence of the animal, it does not appear to the writer that the serum simultaneous method should be recommended for general use by inexperienced persons.

Conclusion.—Immune hogs treated with large quantities of virulent blood produce a serum which will render susceptible hogs either actively or passively immune, depending upon whether it is accompanied by infection.

The serum should be used before the animal shows any indication of disease; that is, before the virus has increased to any considerable quantity in the body.

The serum treatment should be accompanied by infection in order to produce an active immunity. Consequently the chief indication for the use of the serum alone is on apparently well animals in infected herds. The serum simul-

taneous method is indicated in healthy herds in danger.

It is useless to attempt treatment of animals already showing symptoms of the disease unless very large quantities of serum are used.

That, inasmuch as immunity is always specific, only the virus which is now known to be the actual cause of hog cholera can be used in the production of a successful immune serum for hog cholera.

HOG CHOLERA AND PREVENTIVE TREATMENT.

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Among the problems which relate to the study of hog cholera there are two which are of intense importance: (1) the nature of the caustive factor, and (2) preventive treatment. Investigations strongly suggest that some living organism is present in the filterable virus and that this organism is ultra-microscopic in size. One cannot absolutely eliminate the possibility, nevertheless, that the failure to find the infecting agent depends upon such conditions as the uncultivability or instainability of the possible organism.

The study of hog cholera, in all its various phases, centers in the one practical problem of serum immunization. For the past two years the Kansas Experiment Station has been actively engaged in conducting a series of experiments on hog cholera and preventive treatment. The character of this line of work involves the experimental use of the horse as a medium for the modification of the hog cholera virus. It has been found that a short residence (1 to 2 hours) of the hog cholera serum in the circulation of the horse does not change the infectious nature of the material. Indeed, experiments tend to show that a residence of one or two hours in the blood system of the horse sometimes raises the virulence of the hog cholera virus. Abundant experiments also show that during a residence of from four to twenty-four hours in the circulatory system of the horse there is a gradual attenuation of the hog cholera virus, the degree of attenuation depending upon the number of hours allowed for this purpose. Theoretically, therefore, there is some period of time, at some point between four and twenty-four hours after the horse has received the intravenous injection of hog cholera serum, when the virus is sufficiently attenuated to act as a vaccine under all conditions, yet is devoid of infectious qualities. Our work has proven that such a hypothesis is experimentally true.

Since September, 1908, the Kansas State Experiment Sta-

tion has vaccinated 1153 hogs with experimental horse serum hog cholera vaccine. These animals, with the exception of one herd, were situated on various farms in the state. Eight hundred and twenty-six unvaccinated hogs were kept in the same enclosures with the vaccinated animals.

The first test was made in a herd of 485 hogs belonging to Martin Bauer of Broughton, Kansas. In this herd 24-hour horse serum vaccine was used. (Horse serum drawn twenty-four hours after the animal had received an injection of hog cholera virus in the jugular vein.) At the Station rigid tests of 24-hour horse serum vaccine showed that it possessed some immunizing properties, but did not yield constant results. These observations were confirmed by this field test on Mr. Bauer's herd of hogs. In this herd of 485 hogs, 222 received this experimental vaccine, 88 received Bruschettini's vaccine, and 175 were unvaccinated. This herd contracted hog cholera through natural exposure from an adjacent farm three weeks after the vaccination, and the following animals died: College vaccinated, 73.4 per cent; Sorby vaccinated, 90 per cent; unvaccinated animals, 89.1 per cent.

Afterthis experiment a stronger vaccine was used. This was "6-hour horse serum" vaccine which, after careful tests at the Station, was used in thirty herds of hogs. In eleven of these herds the experimental vaccine appeared to produce the disease. In most instances the disease appeared in a mild form, but in a few cases acute hog cholera was present. Of the total number of vaccinated hogs, 7.1 per cent gave evidence of contracting the disease from the vaccine.

In all of these herds, almost without exception, the hogs were on heavy feed. In nearly all instances the hogs were fat and were fed heavy rations of corn. Therefore we found that the 6-hour horse serum vaccine could not be used with perfect safety upon fat, corn fed hogs. Nearly all these eleven herds were in close proximity to hog cholera at the time of vaccination; therefore, in some cases, the disease may have gained access at the time of vaccination.

In ten of the total thirty herds, hog cholera existed at the time of vaccination. In these ten herds an average of 25.9 per cent of the vaccinated hogs died while the average mortality of the unvaccinated animals reached 54.6 per cent, showing a saving of 28.7 per cent of the animals by the vaccination.

On December 8, 1908, the herd of J. C. Goss, Frankfort, Kansas, was vaccinated. Out of the total sixty-one hogs in this herd, twenty-eight were vaccinated, leaving thirty-three controls. This herd was already exposed to hog cholera. Two days after vaccination four of the vaccinated animals died. After that period none of the twenty-four vaccinated hogs

showed symptoms of the disease, while 51 per cent of the controls became sick and 20 per cent of them died.

On December 24, 1908, a herd of 328 hogs in Dallas, Texas, showed symptoms of hog cholera. During the morning three of them died and careful post mortem showed typical lesions of the disease. During that day 125 of the hogs were vaccinated with 6-hour horse serum vaccine. By February 27, the disease had run its complete course. One hundred ninety of the unvaccinated hogs and twenty-five of the vaccinated were dead. In other words, among the controls there was a mortality of 90.5 per cent, while only 20 per cent of the vaccinated animals died.

In the case of both of the herds mentioned above the owners were very careful not to overfeed. The Texas herd received no corn, but were being fed hotel refuse.

From an experimental point of view the results of the field work with horse serum vaccine have been highly satisfactory. Considerable experimental work remains to be done both in the laboratory and in the field. We know, however, that, theoretically, the method is successful, that experimentally, it will produce active immunity. The results, therefore, appear to be of sufficient promise to justify aggressive work in an effort to complete the study. Even should the horse serum vaccine never appear to be a thoroughly practical product upon further investigation, results may be obtained which will be of both experimental and practical importance. Indeed, it has already been shown that by injecting hog cholera virus into the blood system of the horse the resulting horse serum when drawn off one or two hours after the injection, is highly virulent. This fact alone could be used to advantage in hyper-immunizing hogs in producing the hyper-immune serum, according to the government method. The infectious horse serum could be prepared much more quickly and cheaply than could hog cholera serum.

The important factor in comparing the two methods (the hyper-immune serum and horse serum vaccine) is the expense involved in the preparation of the two products. The hyper-immune serum should be used in case of infection in a herd. It is then practical because of the principles underlying its immunizing action and because its expense is slight when compared with the value of the animals it will save. As preventives or vaccines, on the other hand, the hyper-immune serum and the simultaneous methods are, at present, too expensive to be practical. If the horse serum vaccine upon further investigation appears to be safe and efficient under all conditions, the expense involved in its preparation can never curtail its extensive use.

Without going into the details of the relative cost of the products used in the two methods (hyper-immune serum and the horse serum vaccine) a simple statement can sufficiently show the relative expense of the two. Take the ratio between the amount of blood serum which can be secured from a hog and that which a horse will yield. Multiply the number representing the amount of horse serum which can be obtained, by four, because the does of hyper-immune serum used in treating hogs is four or more times that of the horse serum vaccine used in vaccinating. The resulting proportion represents the relative cost of the two products. Furthermore, among other items not considered, may be mentioned the fact that the horse may be used for at least two or three subsequent serum yields while the carcass of the hog is probably destroyed or sold after the first yield. If the hog is not bled to death his serum yield is reduced by at least one-half or one-third.

Should the work of this station succeed in demonstrating the practicability of the horse serum vaccine we would then have a successful means of combating hog cholera. The hyper-immune serum would still hold its important place, that of a passive immunizing and therapeutic agent in the case of outbreaks, while the horse serum vaccine would be used purely as a vaccine or active immunizing agent among healthy herds.

EMPIRICISM IN 1862.

(S. K. Shenk M. D. 418 N. Topeka Wichita. Kans.)

Some years ago one morning, I was greeted at the front door by a telegraph messenger, with the news that the remaining two of our family, had perished during the night in the fire which destroyed the old home entire, save an old library table on which I had many battles with the three R's. In the drawer was the following bit of compiled Veterinary knowlege.

RECEIPT FOR RHEUMATISM

1 qt. Good rye whiskey,
2 oz. Camphin,
2 oz. Ground cloves,
3 Table spoons full fine salt,
5 or 7 Spanish pepper heads.

SWINNEY

Swinney du bist von fleisch und blut, mark und bein, und nicht so hard als dieser stein.

☞It must be done 3 times with a new brick that was never wet. and renewed 3 times and rubed until the brick gets worm, then put the brick in a dry place so it dont get wet.

RING BONE & SPODA

Take lard and grease the spot, then apply the best Turpentine and rub it well. Also another For Ring Bone, Take a string accidentally found on the road in the decreacing Moon, and tie it around the foot on first Friday in said decreacing of the Moon.

TO DRY & HEAL SORES

Take green Box, about a handful and boil it in a gallon of water and wash it, which will dry it up nice; It will also cure the scratches, and Rotten hoof on horses.

WIND COLICK

Take a gallon of sweet milk mixed with fresh Cow dung; or take a pint whiskey and chalk as large as an egg, each of them given will cure wind colic in horses. January 9, 1862. JACOB MILLER.

The first drug is now very extensively used by natives of Kansas for divers diseases, though not in common use for rheumatism.

In the second section will some competent up to date theropeutist tell us what would happen, should some careles person let the brick get wet thirty or forty years after the horse had died.

In the last advice we believe the sex of the animal supplying the remedy should be changed to be effective.

PARTURIENT LAMINITIS.

BENJ. F. KAUPP, B. Sc., D. V. S.
Pathologist Veterinary Dept., Colorado Agricultural College, Ft. Collins, Colo.

Fleming in his text book on Obstetrics gives a short chapter on this subject. It is reported as following, in from a few hours to three or four days after parturition or abor-

DR. B. F. KAUPP

tion. The symptoms are given as those of fever, quick hard pulse, hurried respiration, loss of appetite, depression, both fore and hind limbs may be affected. Rapid cessation of milk

secretion is also noted. While a parturient state is recognized as a predisposing cause, yet, little is really known as to the detail along this line. This condition is also recorded as occuring in cows under like conditions. This is a rare disease. The following is a description of a case which recently developed in a mare belonging to the Government breeding station which is in connection with the State College.

Mare had aborted when within one week of full term. Three days later the attendant noticed that she was quite sick. Upon visit and examination the following conditions were found. Temperature 105.8 F., accelerated respiration, heat weak, pulse 90 per minute, congested conjunctiva, great depression, right fore leg swollen from body to foot. Throbbing of digital arteries. Occasional jerk of the leg. Very lame on this limb.

Poultices to the feet and stimulents (strychnine sulphate and Fldext. digatalis) was administered.—Recovery.

(Ed. Note.—In the experience of the editor, "Parturient Laminitis" has not been a rare sequel of cases of difficult parturition in mares, and the hind feet have been affected in three times as many cases as the fore feet. I have never noted swelling of the legs. These cases have always been accompanied by acute metritis and a high temperature. Cases treated with strychnine and cimicifuga internally and cold packs to the feet sloughed the hoofs of affected feet. Cases treated with brisk cathartics, black cohosh and aconitine till the fever subsided, and given several uterine irrigations, completely recovered in a few days.)

REPORTS OF CASES.

(Dr. C. H. Gaines, Chilhowee, Mo.)

Case 1.—A bay filly two years old, oedematous swelling posterior to the right elbow, some pleuro-pneumonia, temperature of 106 4-5, resp. 40, pulse 74. History, animal probably injured in the stall a month before I saw her. Temperature continued from 103 to 105 four weeks, when there existed an oedematous swelling of the limbs and sternum, and a dropsical condition along the infero-abdominal region.

I decided to explore by use of the trocar a suspected abscess located posterior to the right elbow. After passing through the inter-costal muscles there was discharged a bloody slightly purulent fluid. I then flushed out the abscess with sterile water. The medication during the first four weeks consisted in the administration of the following: Fluid extract belladonna, fluid extract white bryonia a. a. drams iii, strych-

nine sulphate, grs. vx, aquae q. s. ounces viii, M. Sig. two drams every hour. In addition to this an occasional aloetic ball was given. After paracentisis there was given 3 grs. pot. bichomate daily for fifteen days when all swelling had disappeared. Following this daily doses of one ounce each of Fowler's solution. Animal made a good recovery.

Case 2.—Jersey cow, six years old. Temperature 104, resp. hurried, eyes glassy, gait staggering, had been feeding in a stalk field. Treatment, 30 minim doses of oleum tiglii, one-half ounce tincture nucis vomicae in one quart oleum lini. Recovery complete in twenty-four hours.

Case 3.—Post mortem on a yearling mule. The owner had made a diagnosis of "kidney trouble". The autopsy revealed a rent in the wall of the second section of the large colon, about six inches anterior to the pelvic plexure. The animal was sick only about eighteen hours.

OUR VETERINARY MEDICAL ASSOCIATION—ITS BENEFITS AND DUTY.

By Dr. R. LaPointe.

The noblest and most worthy object for which a veterinary medical society is organized, is the education of its members in the work of their profession. I do not know of any other calling in which it is so necessary to constantly study, as in that of medicine.

One distinguished American diplomat, Andrew D. White, has written this comment upon Russia's most noted writer: "Of all distinguished men that I have ever met, Tolstoi seems to me most in need of that enlargement of view and healthful modification of opinion which comes from meeting men and comparing views with them in different lands and under different conditions." The enlargement of view and healthful modification of opinion is as much needed by our profession as by men of letters.

Associations in nearly every profession have held from time immemorial, and it goes without saying in modern age, that a profession worthy of its name must have its association meetings; such meetings are of inestimable value to the young veterinarian, and he will doubtless attain into broader vision and safer opinions in due proportions to the extent of his personal experience in the direct practice of his profession, by thus meeting and comparing views with others in the same profession.

This interchange of ideas and informal discussion of the common everyday subjects, and we all feel anxious to grasp any new ideas that may come up before such gatherings, can

not help but send fresh blood coursing through our veins, and put new courage in our hearts, and we shall return home from such meetings happy to have become enlightened on some subject that has been troublesome to us, and pleased, it may be, to have been of some direct or indirect help to another.

Attendance at the meetings of our society comes to possess a charm for the earnest veterinarian like that of the campfire rally of the soldier; it leads to the cementing of old friendships and the formation of new ones, reacting upon the ordinary routine of work in the same manner as all Alumni meetings.

The well known effect of this is manifest in the sharpening of the intellect and broadening of the humanity of the veterinarian. This leads directly to the good of all concerned.

Our association meetings are in many instances the only post graduate course the practitioner will ever know. They may be made of constant and progressive value. Too often the veternarian closes his books with graduation. But no professional man can afford to stop learning. Fellowship with men of like aims stimulates progress, activity and work. Isolation nurses stagnation. A man may resolve that in ten years he will be a great veterinarian; shut himself up in his narrow sphere, save money and the effort and time necessary to attend his association meetings. At the end of those years he is less a veterinarian than at the beginning; for, by that time even his dream will have become stale, his desire withered, his ambition gone out; the speediest horse is developed in the race, not at the plow.

Certainly any intelligent member of our profession, knowing the possibilities of fellowship, for social, financial and professional improvement, and ethical development attainable in a well conducted association, should be unwilling even for a single meeting to deny himself the benefits which this society offers.

There is no man worthy of professional fellowship and public confidence who would not gladly be connected with such an organization. Every reputable veterinarian should be enrolled in this association. The time is near at hand when such membership will not only be essential to social position and material welfare, but will be considered a necessary requirement for professional standing.

This is especially true of the young veterinarian who needs the sympathy, encouragement and counsel of the older members of the profession. But our organization must have some work besides self preservation. Its only reason for existence is the good it may accomplish, and it has a two-fold obligation: first, to its members; second, to those outside its

ranks. To its members the opportunities for benefits are unlimited, as I have tried to point out. To others, for example the breeder and stock raiser, the association can be of greatest service. We should cultivate public sentiment. Educate it in matters of hygiene and sanitation; instilling into it the great fact of its preventability of contagious diseases; the criminality of carelessness, the value of care.

It may be said if we educate the people to this extent that they will not need a veterinarian—but this thought is as narrow as it is evil. We know that as a rule we get more business from an intelligent and educated owner than from one who does not know the first rudiments of our profession.

The public knowledge in regard to contagious diseases and their causes is very limited among our farmers. If they have any small animals that don't look well or don't thrive like the rest, rest assured there is something wrong with them. Some unscrupulous stock raiser will butcher and sell them. This is a very common occurrence with the poultry business. Therefore I believe that one of the most important influences that organizations of this character serve is the education of farmers. Promotion of knowledge among farmers is the basic need of today. No other class of men has been so neglected as the farmers of this country. The live stockowners should be educated by means of official publications, the agricultural and the general press, lectures at farmers' institutes. A practical tuberculosis demonstration should be given by someone, who should have an infected animal slaughtered, explaining in this manner the workings of the diseases.

Let each one of us take it upon himself to have the many instructive veterinary articles that we know would be of benefit to the stock owners reproduced in our local papers. In this way, as I have shown, we may best create public sentiment and indirectly reap our reward.

The Secretary should have a complete list of the veterinarians of the State. It is a simple matter to check up the membership list with the list of the veterinarians that thus make up the list of non-members. Probably a few of the names found thereon will be those of undesirable individuals, who for various reasons would not be accepted by the association. The bulk of them, no doubt, are well meaning and entirely respectable veterinarians whose lack of interest in veterinary organization is due mainly to the fact that they have never been shown its important bearing on their professional work and its relation to the stock raisers.

The names of all these veterinarians should be included in the mailing list of the Secretary, and to all desirable nonmembers should be sent announcement of our meetings.

There is no duty which the veterinary association owes which is of greater importance than that of looking after the recently graduated veterinary student.

We should all be possessed of the same desire, to do all in our power to better as much as possible the welfare of the members of the association.

CONTAGIOUS ULCERATIONS OF THE TEATS OF COWS.

Report of an outbreak in Eastern Cuba, by Dr. Emilio L. Luaces, Santiago de las Vegas, Cuba, Chief Veterinarian to the Dept. of Animal Industry.

A report of the Governor of the Province of Oriente, to the Hon. Provissional Governor of Cuba, transmitted to the Secretary of Agriculture, informing of the presence of an unknown disease of cattle, which was causing great damage in the Province of Oriente, and which was characterized by the appearance of ulcerations in the teats of the cows, especially in those used in the ranches for milking purposes, for manufacture of cheese.

As a result of the above report, I was ordered by the Hon. Secretary of Agriculture, to proceed at once to the localities where the disease was reported to be causing the greatest damages.

On my arrival to the Province of Oriente, I found that the local cattlemen were much alarmed, their impression being, that their cattle were affected by the dreadful "foot and mouth disease", but from the symptoms they furnished me I was at once inclined to think the disease was not that supposed by the cattlemen.

Five days visiting those ranches where I was informed the disease existed allowed me to find out of 3,000 cows and steers examined, only 55 cows affected with the ulcerations in the teats; no other symptoms but the ulcerations of the teats could be found, the animals ate well and aside from the ulcerations looked healthy.

The course of the disease was as follows: At first a small vesicle would form on some part of the surface of the teat and this vesicle, the size of a small pea, containing a yellowish fluid, would rupture three or four days later, the fluid escaping from it and running over the surface of the teat causing the formation of new ulcers, the result being that in a week or ten days the entire teat would be covered with ulcers; in some extreme cases, there was sloughing of parts of the teat.

In no case of those that I was able to examine, was there found any symptoms other than the ulceration described; these ulcers in the teats were never seen affecting the udder.

A study of the surrounding conditions was necessary for diagnosis of this outbreak. In the first place, I observed that the disease was mostly confined to those ranches located in the low swampy region of the Province of Oriente, that the season of the year, being that of the heaviest rains, had converted all these pasture lands into swamps, in which the cattle stayed almost the entire day and even lay down at night in the mud; the above conditions were in my judgment the cause of the outbreak.

The disease was reported to the Secretary of Agricuture as being an outbreak of contagious ulcerations of the teats of cows, caused by some organism from the soil.

The results of the following method of treatment completely satisfied me that the disease was caused by the conditions of the swampy low lands used for pastures, associated with the filthy conditions of the corrals where the animals were milked.

As to treatment, this consisted in the immediate enforcement of sanitary measures, disinfecting the corrals and places where the dairy animals slept at night, avoiding contamination, and isolating the sick; not milking the sick animals until after the others, careful washing of the affected parts with a 2 per cent solution of carbolic acid in water, and cauterization of the ulcers with pure tincture of iodine, tanic acid, and glycerine, in equal parts.

The cattle all recovered, and no more cases have been reported and the people of Eastern Cuba are no longer inclined to think that their cattle have the "foot and mouth disease", which I hope will never come to visit this, my dear country, which the great discoverer of the new world so wisely called the most beautiful land that human eyes ever witnessed.

NEWS

Colorado veterinarians are jubilant over the new Practice Act that has just become a law to supercede the old one. It is a much stronger law and gives protection to both stock-owning people and practicing veterinarians. To begin practice in the State of Colorado now one must have qualifications equal to those for membership to the American Veterinary Medical Association. But how about some other states? One of the publishing committee recently received a letter from a practitioner in Missouri who stated that it appeared that the State Board has not been able to properly stem the tide of charlotism that in a town of fifteen hundred inhabitants no less than three "quacks" were practicing, posting their

state certificates in conspicuous places, purporting to the people that they were qualified men and so recognized by the state authorities, and issuing cards and signing their names "Doctor so and so." One of these same men, who calls himself a doctor, recently sent to the drug store for an ounce of tr. opium, and because it was labeled laudanum, told the druggist that he had not sent tr. opium, and that he had not gotten results. It behooves every veterinarian to lose no time in boosting for more efficient laws—laws that are a real benefit to stock-owning people.

Dr. Charles Eastman recently passed through Kansas City en route to Los Angeles, Calif., from St. Louis, Mo.

Dr. E. S. Dickey, veterinary inspector in the B. A. I., has recently been promoted to traveling inspector.

Dr. Simpson, of Yates Center, Kansas, was in Kansas City recently purchasing instruments for his increasing practice.

Dr. Chas. G. Lamb, of Denver, has been reappointed State Veterniarian of Colorado.

Miss Dorothy Murlene Arnott recently came to reside with her parents, Dr. and Mrs. L. P. Arnott of McPherson, Kans.

Dr. J. M. Caufield late of Neligh, Neb. has located at Lyons in the same state

Dr. C. R. Walter; Tulsa, Oklahoma was appointed May 20th., Food and Dairy Inspector for his home city.

Dr. Robt. Newman, of Englewood, Kansas, was a Kansas City visitor on May 25th.

Dr. W. A. Frye, Veterinarian in charge of tick eradication at Rogers, Ark , took sufficient time off from his ardent duties to visit Kansas City on the 22nd of May.

Dr. Gola Steele, Veterinary Inspector at Neosho, Mo.. was in Kansas City in the early part of May. We surmise he has some attraction there that induces him to make frequent trips.

Dr. Tom Eagle, Veterinary Inspector in Kansas City, Kansas, has been having a siege with typhoid fever. We are glad to report that the Doctor is now improving and hopes to be back on duty in the near future.

Dr. L. R. Baker, Veterinarian in charge of inspection in Kansas City, Kansas, was in Chicago, May 10th, 11th, and 12th, where he attended the meeting of the Veterinary Inspectors in the Bureau of Animal Industry.

Dr. R. F. Bourne returned to Kansas City on May 24th, after a six weeks outing in central Kansas.

Dr H. Crandall, of Seneca, Kans., and Dr. J. V. LaCroix, of Hiawatha, Kansas, were Kansas City visitors on May 26th.

Dr. A. T. Kinsley was in attendance at the tuberculosis exhibit at Lawrence, Kansas, May 24th and 25th.

Dr. W. T. King, of Olathe, Kans., made a hurried trip to Kansas City, May 26th.

A railway man tells of an incident connected with construction work of a railway being built in Virginia. The Italian laborers so employed had their wages reduced. Instead of striking, they hit upon a novel means of getting even with the company. Each cut off a piece of the blade of his shovel. When the foreman observed this he inquired, in profane terms, what it meant. Whereupon one of the Italians, with a smattering of English, replied:

"Nota so mucha pay, nota so mucha dirt lifta. All ri—job lasta mucha more long. Italiana man no fool lika Americano; he no strika."—Harpers Weekly.

"What is the trouble? What is the trouble, my good man?" said the minister, entering the house of a parishoner who was laying down the law somewhat emphatically to his family circle.

"Tr-tr-ou-ble? t-r-o-u-b-l-e?" said the man. "Why, hang it, little Johnnie here just set his-self on fire, and blowed if the old woman didn't go and put the fire out with the last can of beer I had, and me dead broke, too!"—Harpers Weekly.

Man passes for what he is worth. What he is engraves itself on his face, on his form, on his fortunes, in letters of light. Concealment avails him nothing, boasting nothing. There is confession in the glances of our eyes, in our smiles, in salutations, and the grasp of hands. His sin bedaubs him, mars all his good impression. Men know not why they do not trust him, but they do not trust him. His vice glasses his eye, cuts lines of mean impression in his cheek, pinches the nose, sets the mark of the beast on the back of his head, and writes: O fool! fool! on the forehead of a king.—Emerson.

Nothing is easier than fault finding; no talent, no self denial, no brains, no character are required to set up in the grumbling business.—Robert West.

No enemy is worth having unless his bitterness is big.—The Fra.

You benefit yourself as you benefit humanity.—James Oliver.

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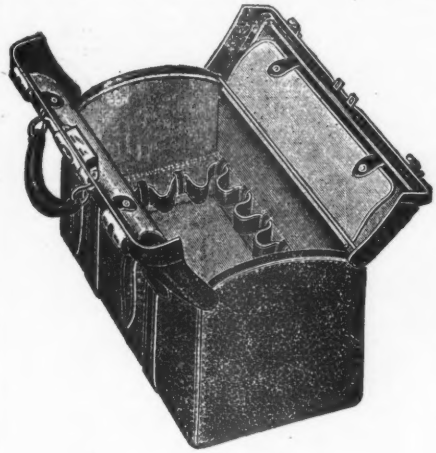

Fig. 2382

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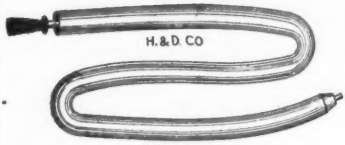

Fig. 898

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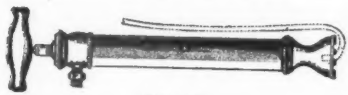

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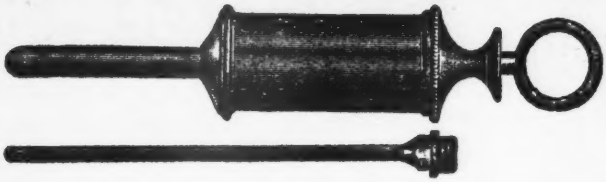

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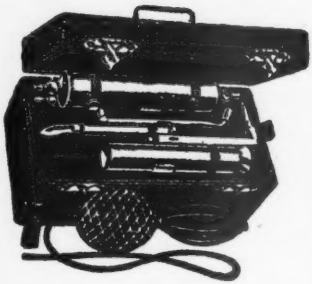

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